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EDITORIAL

Dilemma represented by mandibular prognatism

El dilema del prognatismo mandibular

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«If you think that education is expensive, try ignorance».

Derek Bok

Much can be said about multiple diagnostic alternatives and treatments known to this date for treatment of class III malcoclusions, nevertheless, oftentimes results obtained can be poor, slow and even frustrating for the specialist.

How could it be explained to a patient that after visiting three dentists, and having used multiple class III functional appliances such as chin cups, facial masks, expansion and extraction of premolars for a seven year period, that he still requires orthognathic surgery, two further years of treatment, multiple gingival grafts in lower incisors, crowns in molars due to decalcification, as well as life-long follow-up of his short roots?

Any orthodontic specialist has clearly faced this type of circumstances, even more in these crisis-laden days when pediatric dentists are orthodontists and any general dentist is a maxillofacial specialist. The answer to this type of questions contains a mixture of ignorance, ambition, arrogance, fear, impatience and ag total loss of respect when facing the problems presented by the patient.

Everything begins with a simple kitchen recipe of the orthopedics week-end course. It is there stated that patient's clinical assessment is in order to confirm a class III malocclusion, and when in doubt, anterior-posterior cephalometric measurements should be taken, since the patient might present full primary dentition. The diploma course taken by the dentist was very extensive: great amounts of functional appliances were manufactured in practice study models, therefore, treatment and design selection for a removable class III functional appliance was relatively easy. The dentist, assuming a *messianic* capacity, offers the parents absolute certainty that the treatment will last a few months and that it will successfully come to fruition. «*This German technological appliance that I learned how to use during my diploma course, will stop the mandibular growth of your daughter, it is therefore indispensable that you should initiate treatment with regular bi-monthly visits in order to adjust palate appliances and thus avoid surgery*».

After a few weeks of treatment, the appliance begins to hurt, the patient ceases to cooperate and there is even further manufacture of additional appliances when the patient mislays the palate in school or elsewhere. Two years later, facing lack of results and use of great numbers of class III orthopedic appliance variations, the dentists finally establishes that failure is due to lack of patient cooperation.

Parents accept their responsibility and explore new treatment alternatives which might not require appliance placement in the mouth. While negative horizontal overbite has been preserved, vertical overbite has increased, moreover, upper permanent laterals and centrals have erupted. «*I gather the first treatment was not the most suitable. As a pediatric dentist specialist I can say that what your child requires is a treatment which will stop mandibular growth, therefore, on the jaw, we need to use a chin cup with counterforce since otherwise, surgery will be needed in order to correct the problem*» stated the second dentist with great authority. Parents decided to initiate a second treatment. The patients fear of surgery renders his cooperation impeccable, and used the appliance for over 12 hours a day. With time, the situation deteriorates; now there is important crowding on anterior teeth and clear open bite in addition to prognathism. The specialist decides to increase the load on the chin cup as well as extract primary upper and lower first molars and canines in order to solve the problem of lack of space

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through a serial extraction treatment. Two years later, the patient's problem not only persisted but had worsened.

The patient finds herself now at the beginning of puberty, first menstruation indicators are present. After four years of failed treatment with two different dentists, the patient's parents disappointed and desperate, seek a third option.

The parents widely inform the third dentist, an orthodontic specialist, all formation pertaining to the patient's bite problem. The patient presented in both arches moderate prognathism, anterior open bite, mandibular crowding and severe crowding, with sole presence of primary second molars.

Parents' distress is evident, they flatly refuse to subject their daughter to surgical treatment. The notion of surgery, which once was contemplated as a distant alternative, is now present in their minds. The orthodontist establishes poor diagnosis for both previous treatments and decides to discontinue chin cup use in order to place in both arches an expander with facial mask and fixed appliances. After a few months, upper arch expansion causes gingival recession at the canines' level, and the *non extraction* in the mandible causes impaction of second permanent molars. After re-assessing the case, it is decided to extract upper second premolars and lower first premolars with the aim of favoring space and allowing tooth alignment with fixed appliances, as well as increasing load with facial mask in order to improve class III malocclusion and hope for orthopedic modification as well as full arrest of mandibular growth. Three years after having initiated the third treatment, even though teeth were aligned, negative horizontal overbite was very noticeable, lower incisors are fully retro-tilted and upper incisors are pro-tilted. Open bite persisted as well as facial asymmetry and mandibular prognathism. Parents are now so doubtful about results that they begin to compare orthodontics with some alternative medicine treatment.

These adverse circumstances cause the parents to consider one last treatment option with a new orthodontist, due to dental and emotional sequels experienced by their daughter who has now completed puberty, and now only aspires to possess suitable smile as well as improve physicial and functional aspect of her dentition. The parents now wonder whether their daughter is a special case and at which moment did treatment lose its course, remembering the words of the first dentist «*your daughter's case is very simple, she only has to use this palate appliances for some time*».

In retrospect, the case undoubtedly required a much deeper analysis than that effected seven years before. Familial history was not questioned. «*Absolutely no one in the family has been afflicted with this problem in the lower jaw*» said the father time and again: he wore moustache and beard since he felt his upper lip was very narrow. After asking him to smile it became evident he presented an edge to edge bite, even with lower canines in cross-bite, in addition to exhibiting asymmetric chin. The vertical problem was totally ignored and caused progathism to be totally underestimated.

Suitable literature knowledge would have provided the operator (who possessed an orthopedics diploma degree) with the knowledge that practically all class III functional appliance do not restrict mandibular growth as such; only the growth rhythm decreases, therefore, with time, growth will be expressed according to the patients phenotype. Additionally class II orthopedic functional appliances will only show compensation effect in dental inclinations, eliciting excessive retro-inclination in lower incisors, and almost nil orthopedic modification in the upper jaw with mainly an ANB correction of not more than 1.8° in average. This does not taken into consideration the great amounts of patient's cooperation and treatment time required in order to be able to observe changes in growth patterns, especially in a pediatric patient [1-3]

Arrogance and lack of knowledge are adjectives which describe the pediatric dentist who implemented the use of a chin cup in order to arrest mandibular growth. Even though it could well have had certain effect on the patient's vertical growth, multiple studies report that use of chin cup along with patient's maximum cooperation only manages to achieve limited rotation of the mandibular plane. Moreover, regardless of force (load) exerted in its use, it does not exert direct effect to significantly curb mandible's real growth; in addition, this slight plane rotation regularly returns to its original position as soon as remaining growth of the patients takes place in the long term.[4,5]

The third orthodontist underestimated mandibular growth with use of patient's expansion and facial mask, since he did not count with academic background which could have substantiated his decision to use of a facial mask as an alternative for effective orthodontic treatment to correct vertical Class III in a frankly late bone maturity period. Many studies show that to greater patient's age, lesser orthopedic modification and greater dental movement can be achieved. Therefore, the real effect of the mask could well have been similar to the one expected with use of class III elastics[6,7] Likewise, the specialist, in his desperate effort to please the patient's parents considered use of arch expansion and dental compensation was well

beyond his limits. There is sufficient scientific evidence showing that great amount of periodontal problems can occur when arches are over-expanded or when incisors are placed outside maxillary and mandibular cortical plates.[8] Finally scientific literature has amply documented that, there is presence of external root resorption after prolonged treatment, as well as the fact of constant application of excessive torque on upper anterior teeth to compensate overbite.[9,10]

Was there really a justification to treat this patient for over 7 years? Would it have been better to wait a few years with no treatment and then conduct surgery? Could we have considered a final alternative treatment instead of surgery? And finally, was the final result due to inadequate treatment or patient's mandibular growth? All the aforementioned questions lack a simple answer. Dilemma of class III malocclusions is constant in daily practice of our pediatric patients, or more evidently in adults. Instead of looking for complex explanations for complex treatments, we should rather conduct a simple analysis of what triggered these results.

The treatment of this patient was very «simple» for dentists and parents. Perhaps this was the reason why they firstly consulted a dentist who was a family friend. He did not t charge, he was a good person, and had just finished a diploma degree to treat this kind of patients.

It is evident that a week-end course of maxillofacial orthopedics to learn how to manufacture appliances and not to scientifically analyze them will importantly limit the dentist's diagnostic abilities. Likewise, a great many pediatric dentistry programs lack sufficient scientific orthopedic background so as to create a critical position, most of these programs are illustratively oriented towards teaching growth and development and lack analytical approach. This might have brought about the proliferation of many courses which award maxillofacial orthopedics specialty, since dentists are subject to the temptation of treating orthopedic problems in a pediatric dentistry office. It is necessary to point out that in this country, most orthodontics programs, even though including in their curriculum preparation and content of subjects oriented towards growth and development, they lack the endeavor of critically reviewing literature.

Who should have treated malocclusion from the beginning? Even though at first instance these patients attend first a general dentist's office, or a pediatric dentist in the best of cases, the orthodontist is undoubtedly the most skilled specialist to treat class III malocclusions. A crisis exists within dentistry programs, even more so in specialty programs; treatments are taught in a technical manner lacking all scientific evidence substantiation. There is also a lack of reading programs for residents of basic literature for each one of the subjects. This causes the inability to establish analytical opinion, based on scientific evidence, empirically applying technical knowledge in the orthodontics clinic. Lack of thorough bibliographical review doubtlessly enable survival of multiple *dental myths* along many generations which could well have been refuted with reading and knowledge development based on scientific evidence, and not academic doctrines of faith.

We should show honesty before treating a patient, we should act with ethical approach, we should avoid arrogance, we should distance ourselves from ill-conceived financial temptations, we should acknowledge our limitations and base our decisions on literature readings supported by scientific evidence.

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